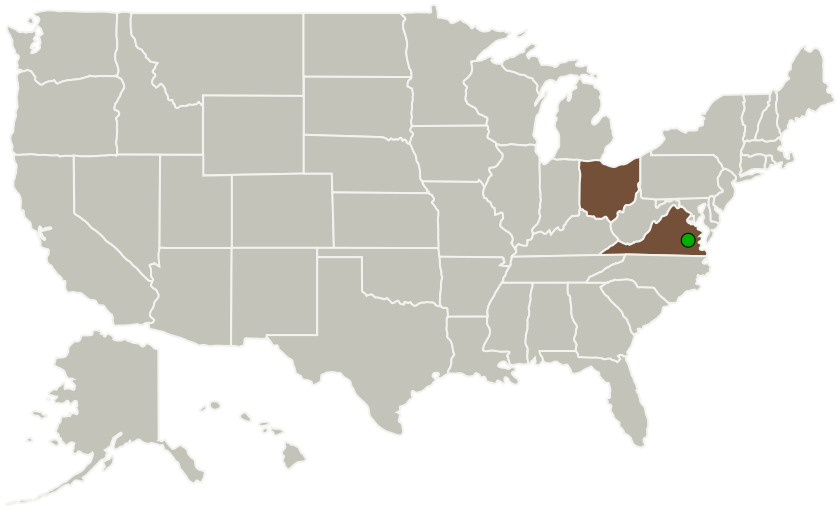
Electrically Activated Shape Memory Composite Deployable Boom, Phase I

Completed Technology Project (2016 - 2016)

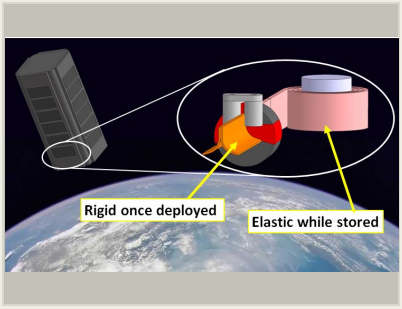
Project Introduction

CRG proposes to advance the solar sail boom system with a bi-stable, deployable, composite boom which implements a composite electrically activated shape memory polymer (EASMP) to transition the matrix with characteristics representing an elastomer, for storage and deployment, into a thermoset creating a rigid boom. This bi-stable solution will allow for a lightweight, reliable, and controlled solution of deployment while consuming less power upon deployment compared to current metal booms. This technology will not be limited by mission; it is scalable for larger solar sails in future missions and missions with similar applications such as the Lunar Flashlight.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Cornerstone Research Group, Inc.	Lead Organization	Industry	Miamisburg, Ohio
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



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Completed Technology Project (2016 - 2016)

Primary U.S. Work Locations	
Ohio	Virginia

Project Transitions

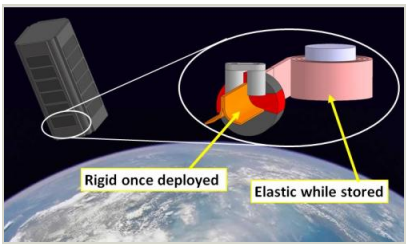
June 2016: Project Start

December 2016: Closed out

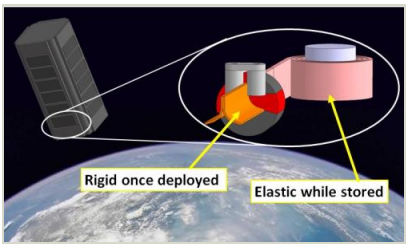
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139736)*

Images



Briefing Chart Image
Electrically Activated Shape Memory Composite Deployable Boom, Phase I
(https://techport.nasa.gov/image/136365)



Final Summary Chart Image
Electrically Activated Shape Memory Composite Deployable Boom, Phase I Project Image
(https://techport.nasa.gov/image/136685)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Cornerstone Research Group, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

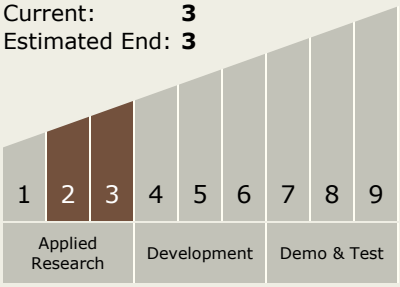
Carlos Torrez

Principal Investigator:

Jason Hermiller

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Electrically Activated Shape Memory Composite Deployable Boom, Phase I

Completed Technology Project (2016 - 2016)

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.2 Structures
    - TX12.2.1 Lightweight Concepts

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System